

IN THE CLAIMS

The following is a complete listing of the claims in this application, reflects all changes currently being made to the claims, and replaces all earlier versions and all earlier listings of the claims:

1. (Currently Amended) A method of compressing image data into a fixed size memory, the image data being arranged into a plurality of scans of bitstream data, the plurality of scans being ordered from a perceptually most significant scan to a perceptually least significant scan, ~~each scan having associated therewith an attribute identifying whether the scan is either active or inactive~~, the method comprising the steps of:

determining whether the scans are active or inactive based on an attribute associated with each of the scans, the attribute being separate to the scan and identifying whether the scan is either active or inactive;

encoding the determined active scans of bitstream data and discarding the determined inactive scans;

transferring the encoded scan bitstream data to the fixed size memory; and

setting, if the fixed size memory becomes full, the attribute of a currently least significant scan of the active scans to inactive.

2. (Previously Presented) A method according to claim 1, wherein the method further comprises the step of:

deleting, if the fixed size memory becomes full, the encoded scan bit-stream data of the currently least significant scan.

3. (Previously Presented) A method according to claim 1, wherein the method further comprises the steps of:

transforming the image;

quantizing the image, said quantizing step employing bit-shifting operations; and

partitioning the quantizing image into the plurality of scans of bitstream data.

4. (Previously Presented) A method according to claim 1, wherein said encoding step further comprises the step of:

entropy encoding the current scan of bitstream data, if the attribute of the current scan is active; otherwise:

proceeding to a next scan of bitstream data.

5. (Previously Presented) A method as claimed in claim 1, wherein the encoding step further comprises the step of:

accessing a scan of bitstream data for encoding in accordance with a scan map.

6. (Previously Presented) A method as claimed in claim 1, wherein the image data comprises a plurality of quantizing 8x8 blocks of DCT transformed image data, and wherein the scans comprise, at least for each color component of the quantizing DCT transformed image data, two scans for the two least insignificant bitplanes of the group of AC coefficients 1 to 32, and two scans for the two least insignificant bitplanes of the group of AC coefficients 33 to 63.

7. (Previously Presented) A method according to claim 1 wherein the scans comprise DC most-significant scans, DC refinement scans, AC most-significant scans, and AC refinement scans.

8. (Previously Presented) A method according to claim 7, wherein one of the DC most-significant scans is the perceptually most significant scan and one of the AC refinement scans is the perceptually least significant scan.

9. (Previously Presented) A method according to claim 2, wherein the image data comprises a plurality of color components and said deleting step includes deleting corresponding encoded scan bit-stream data of more than one color component.

10. (Currently Amended) A method of compressing image data into a fixed size memory, the method comprising the steps of:

partitioning the image data into scans of bitstream data, wherein the scans are ordered from a perceptually most significant scan to a perceptually least significant

~~scan and wherein the scans have associated therewith an attribute determining whether each scan is active or inactive;~~

determining whether the scans are active or inactive based on an attribute associated with each of the scans, the attribute being separate to the scan and identifying whether the scan is either active or inactive;

encoding the determined active scans of bitstream data and discarding the determined inactive scans;

transferring the encoded scan bitstream data to the fixed size memory; and

setting, if the fixed size memory becomes full, the attribute of a currently least significant scan of the active scans to inactive.

11. (Currently Amended) A method of storing coded image data of an image in a storage of fixed memory size, wherein the image comprises a plurality of pixels and the method comprises the steps of:

arranging the image into a plurality of bands each comprising a predetermined number N of consecutive lines of pixels;

buffering and processing the bands one by one in turn, wherein said processing step comprises the following sub-steps for each currently buffered band:

arranging the current band into a plurality of blocks of pixels of size $M \times M$, wherein M is equal to the predetermined number N; and

transforming the blocks of pixels to produce respective blocks of transform coefficients;

partitioning the blocks of transform coefficients into a plurality of partitions wherein each partition comprises data from each block of transform coefficients and at least one partition comprises data from at least one but not all bit-planes of each block of transform coefficients, and wherein the plurality of partitions comprise a perceptually significant partition and a perceptually insignificant partition and partitions of varying perceptual significance therebetween, and wherein each of the partitions have associated therewith ~~an~~ a corresponding attribute determining separate to the partition and identifying whether the partition is active or inactive;

entropy coding each active partition while discarding the inactive partitions;

and

managing the storing of the entropy coded partitions in the storage of fixed memory size, wherein, during the storing of the entropy coded partitions, if it is determined that the storage is full a coded least perceptually significant partition currently stored in the storage is overwritten by data from a coded more perceptually significant partition, and the attribute of the overwritten perceptually least significant scan is set to inactive.

12. (Currently Amended) Apparatus for compressing image data into a fixed size memory, the image data being arranged into a plurality of scans of bitstream data, the plurality of scans comprising a perceptually most significant scan to a perceptually least significant scan, ~~and each scan having associated therewith an attribute identifying whether the scan is active or inactive,~~ the apparatus comprising:

means for determining whether the scans are active or inactive based on an attribute associated with each of the scans, the attribute being separate to the scan and identifying whether the scan is either active or inactive;

means for encoding the determined active scans of bitstream data and discarding the determined inactive scans;

means for transferring the encoded scan bitstream data to the fixed size memory; and

means for setting, if the fixed size memory becomes full, the attribute of a currently least significant scan to inactive.

13. (Currently Amended) Apparatus for compressing image data into a fixed size memory, the apparatus comprising:

means for partitioning the image data into scan bitstream data, wherein the scans are ordered from a perceptually most significant scan to a perceptually least significant scan ~~and wherein the scans have associated therewith an attribute determining whether a scan is active or inactive;~~

means for determining whether the scans are active or inactive based on an attribute associated with each of the scans, the attribute being separate to the scan and identifying whether the scan is either active or inactive;

means for encoding the determined active scans of bitstream data and discarding the determined inactive scans;

means for transferring the encoded scan bitstream data to the fixed size memory; and

means for setting, if the fixed size memory becomes full, the attribute of a currently least significant scan of the active scans to inactive.

14. (Currently Amended) Apparatus for storing coded image data of an image in a storage of fixed memory size, wherein the image comprises a plurality of pixels and the apparatus comprises:

means for arranging the image into a plurality of bands each comprising a predetermined number N of consecutive lines of pixels;

means for buffering and processing the bands one by one in turn, wherein the processing means comprises:

means for arranging a currently buffered band into a plurality of blocks of pixels of size MxM, wherein M is equal to said predetermined number N; and

means for transforming the blocks of pixels to produce respective blocks of transform coefficients;

means for partitioning the blocks of transform coefficients into a plurality of partitions wherein each partition comprises data from each block of transform coefficients and at least one partition comprises data from at least one but not all bit-planes of each block of transform coefficients, and wherein the plurality of partitions comprise a perceptually significant partition and a perceptually insignificant partition and partitions of varying perceptual significance there between, and wherein each of the partitions have associated therewith an a corresponding attribute determining separate to the partition and identifying whether the partition is active or inactive;

means for entropy coding each active partition and discarding each inactive partition; and

means for managing the storing of the entropy coded partitions in the storage of fixed memory size, wherein during the storing of the entropy coded partitions, if it is determined that the storage is full a coded least perceptually significant partition currently stored in the storage is overwritten by data from a coded more perceptually significant partition, and the attribute of the overwritten perceptually least significant scan is set to inactive.

15. (Currently Amended) A computer program product comprising computer readable program code recorded on a machine-readable recording medium, for controlling the operation of a data processing apparatus on which the program code executes to perform a method of compressing image data into a fixed size memory, the image data being arranged into a plurality of scans of bitstream data, the plurality of scans ordered from a perceptually most significant scan to a perceptually least significant scan, ~~each scan having associated therewith an attribute identifying whether the scans are active or inactive,~~ the method comprising the steps of:

determining whether the scans are active or inactive based on an attribute associated with each of the scans, the attribute being separate to the scan and identifying whether the scan is either active or inactive;

encoding the determined active scans of bitstream data and discarding the determined inactive scans;

transferring the encoded scan bitstream data to the fixed size memory; and

setting, if the fixed size memory becomes full, the attribute of a currently least significant scan of the active scans to inactive.

16. (Currently Amended) A computer program product comprising computer readable program code recorded on a machine-readable recording medium, for controlling the operation of a data processing apparatus on which the program code executes to perform a method of compressing image data into a fixed size memory, the method comprising the steps of:

partitioning the image data into scans of bitstream data, wherein the scans are ordered from a perceptually most significant scan to a perceptually least significant scan ~~and wherein the scans have associated therewith an attribute determining whether each scan is active or inactive;~~

determining whether the scans are active or inactive based on an attribute associated with each of the scans, the attribute being separate to the scan and identifying whether the scan is either active or inactive;

encoding the determined active scans of bitstream data and discarding the determined inactive scans;

transferring the encoded scan bitstream data to the fixed size memory; and

setting, if the fixed size memory becomes full, the attribute of a currently least significant scan of the active scans to inactive.

17. (Currently Amended) A computer program product comprising computer readable program code recorded on a machine-readable recording medium, for

controlling the operation of a data processing apparatus on which the program code executes to perform a method of storing coded image data of an image in a storage of fixed memory size, wherein the image comprises a plurality of pixels and the method comprises the steps of:

arranging the image into a plurality of bands each comprising a predetermined number N of consecutive lines of pixels;

buffering and processing the bands one by one in turn, wherein the processing step comprises the following sub-steps for each currently buffered band:

arranging the current band into a plurality of blocks of pixels of size $M \times M$, wherein M is equal to said predetermined number N ; and

transforming the blocks of pixels to produce respective blocks of transform coefficients;

partitioning the blocks of transform coefficients into a plurality of partitions, wherein each partition comprises data from each block of transform coefficients and at least one partition comprises data from at least one but not all bit-planes of each block of transform coefficients, the plurality of partitions comprise a perceptually significant partition and a perceptually insignificant partition and partitions of varying perceptual significance therebetween, and each of the partitions have associated therewith an a corresponding attribute determining separate to the partition and identifying whether the partition is active or inactive;

entropy coding each active partition and discarding the inactive partitions;
and

managing the storing of the entropy coded partitions in the storage of fixed memory size, wherein, during the storing of said entropy coded partitions, if it is determined that the storage is full a coded least perceptually significant partition currently stored in the storage is overwritten by data from a coded more perceptually significant partition, and the attribute of the overwritten perceptually least significant scan is set to inactive.

18. (Currently Amended) A system for compressing image data arranged into a plurality of scans of bitstream data, the plurality of scans being ordered from a perceptually most significant scan to a perceptually least significant scan, the system comprising:

a fixed-size memory;

a storage unit for storing information relating to the scans, the information comprising an attribute associated with and separate from each scan to identify the scan as active or inactive; and

a processor connected to said fixed-size memory and said storage unit and adapted to compress the image data into said fixed-size memory, wherein said processor:

determines whether the scans are active or inactive based on the corresponding attribute;

encodes the determined active scans of bitstream data and discards the determined inactive scans;

transfers the encoded scan bitstream data to the fixed size memory;

and

sets, if the fixed size memory becomes full, the attribute of a currently least significant scan of the active scans to inactive.